

CLAIM OR CLAIMS

1. A method for differential compression of a body of data S with respect to a body of data T , comprising the steps of:
 - initializing a sliding window W of size $\text{MAX}\{m,n\}+K$ so that its rightmost m characters are S , where K is an integer such that $0 \leq K < \text{MIN}\{m,n\}$;
 - performing sliding window compression of T with window W , to produce a sequence of pointers, where each of said pointers represents a single character or represents a copy of an earlier substring of T or represents a copy of a substring of S , such that at least one of said pointers represents a copy of a substring of S ;
 - transmitting each pointer of said sequence of pointers to a utilization device that contains a copy of S ;
 - upon receiving each of said pointers at said utilization device, performing an additional sliding window decoding step in the recovery of T , in such a way that the size of the memory used is no more than $\text{MAX}\{m,n\} + K$, and such that after the last pointer is received T is fully recovered.
2. A method according to Claim 1, further comprising the step of:
 - Rearranging substrings of S so that S is better aligned with T .
3. A method according to Claim 1 where $K \leq \text{MIN}\{m,n\}/2$.
4. A method according to Claim 1 where K is $O(\sqrt{\text{MIN}\{m,n\}})$.
5. A method according to Claim 1 where $K=0$.

- 1 6. A method for representing a first body of data T of size n by a second body of data S of size
2 m and a sequence of pointers,
3 where each of said pointers represents a single character or represents a copy of an earlier
4 substring of T or represents a copy of a substring of S ,
5 such that at least one of said pointers represents a copy of a substring of S ,
6 so that it is possible to recover T from S by processing said sequence of pointers
7 and overwriting S from left to right,
8 in such a way that the size of the memory used is no more than $\text{MAX}\{m,n\} + K$,
9 where K is an integer such that $0 \leq K < \text{MIN}\{m,n\}$.
- 10 7. A method according to Claim 6, further comprising the step of:
11 Rearranging substrings of S to that S is better aligned with T .
- 12 8. A method according to Claim 6 where $K \leq \text{MIN}\{m,n\}/2$.
- 13 9. A method according to Claim 6 where K is $O(\sqrt{\text{MIN}\{m,n\}})$.
- 14 10. A method according to Claim 6 where $K=0$.
- 15 11. A method of recovering a first body of data T of size n from a second body of data S of size
16 m and a sequence of pointers, where each of said pointers represents a single character or
17 represents a copy of an earlier substring of T or represents a copy of a substring of S ,
18 such that at least one of said pointers represents a copy of a substring of S ,
19 by processing said sequence of pointers and overwriting S from left to right,
20 in such a way that the size of the memory used is no more than $\text{MAX}\{m,n\} + K$,
21 where K is an integer such that $0 \leq K < \text{MIN}\{m,n\}$.
- 22 12. A method according to Claim 11, further comprising the step of:
23 Rearranging substrings of S to that S is better aligned with T .
- 24 13. A method according to Claim 11 where $K \leq \text{MIN}\{m,n\}/2$.
- 25 14. A method according to Claim 11 where K is $O(\sqrt{\text{MIN}\{m,n\}})$.
- 26 15. A method according to Claim 11 where $K=0$.

- 1 **16.** A system for differential compression of a body of data S with respect to a body of data T ,
2 comprising the steps of:
3 means for initializing a sliding window W of size $\text{MAX}\{m,n\}+K$
4 so that its rightmost m characters are S ,
5 where K is an integer such that $0 \leq K < \text{MIN}\{m,n\}$;
6 means for performing sliding window compression of T with window W ,
7 to produce a sequence of pointers,
8 where each of said pointers represents a single character
9 or represents a copy of an earlier substring of T
10 or represents a copy of a substring of S ,
11 such that at least one of said pointers represents a copy of a substring of S ;
12 means for transmitting each pointer of said sequence of pointers to a utilization device
13 that contains a copy of S ;
14 means for upon receiving each of said pointers at said utilization device,
15 performing an additional sliding window decoding step in the recovery of T ,
16 in such a way that the size of the memory used is no more than $\text{MAX}\{m,n\} + K$,
17 and such that after the last pointer is received T is fully recovered.
- 18 **17.** A system as in Claim 16, further comprising the step of:
19 Rearranging substrings of S so that S is better aligned with T .
- 20 **18.** A method according to Claim 16 where $K \leq \text{MIN}\{m,n\}/2$.
- 21 **19.** A method according to Claim 16 where K is $O(\sqrt{\text{MIN}\{m,n\}})$.
- 22 **20.** A method according to Claim 16 where $K=0$.

1 **21.** A system for recovering a first body of data T of size n from a second body of data S of size
2 m and a sequence of pointers,
3 where each of said pointers represents a single character or represents a copy of an earlier
4 substring of T or represents a copy of a substring of S ,
5 such that at least one of said pointers represents a copy of a substring of S ,
6 with means for:

7 processing said sequence of pointers and overwriting S from left to right,
8 in such a way that the size of the memory used is no more than $\text{MAX}\{m,n\} + K$.

9 **22.** A system as in Claim 21, further comprising the step of:
10 Rearranging substrings of S so that S is better aligned with T .

11 **23.** A system for differential compression and decompression of a body of data T with respect to
12 a body of data S comprising means for:
13 computing strongly aligned moves and using an off-the-shelf compression and
14 decompression method to represent the portions of T not represented by substring moves
15 within S , in such a way that the size of the memory used when decoding is no more than
16 $\text{MAX}\{m,n\} + K$, where K is an integer such that $0 \leq K < \text{MIN}\{m,n\}$.